

3.—*Atapozoa marshi*, a compound Ascidian from Western Australia

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A new sub-family Atapozoinae of the family Clavelinidae is erected to house a new compound ascidian *Atapozoa marshi*, from Western Australia. In general features the zooids resemble those of the genus *Eudistoma* Caullery, 1909, but the presence of a stalked brood pouch and of two median suckers in the tadpole clearly separate the genera.

Order Aplousobranchia Lahille, 1866

Family Clavelinidae Forbes and Hanley, 1848

Sub-Family Atapozoinae, a new sub-family

Compound ascidians. No common cloacal apertures. Zooids with atrial siphons independent and with a specialised brood pouch that arises at thoracic level.

Berrill (1950) recognises three sub-families of the Clavelinidae—Polycitorinae, Clavelininae and Holozoinae. The species described below belongs to none of the existing sub-families, being separated from the first two by the possession of a brood pouch and from the last by independent opening of the atrial siphon and the consequent absence of common cloacal apertures.

Genus *Atapozoa*, n.gen.

Colonies pedunculate or sessile. Both atrial and branchial siphons opening on the surface of the colony, no common cloacal aperture. Zooids hermaphrodite. A specialised brood pouch developing at the thoracic level. Tadpole with two median suckers.

Atapozoa marshi, n.sp. (Fig. 1)

Colonies (Fig. 1A) large, fleshy, pedunculate. Stalk tapering, up to 4.5 cm. long, 2.0 cm. wide at base, 1.0 cm. wide at junction with head. Head up to 4.0 cm. long, 2.8 cm. wide. Test light greenish brown, firm, with numerous irregularly-shaped test cells and containing also round brown "kotballen"—masses of foreign material. Zooids opening only on head region over which they are evenly and regularly distributed. Pharyngeal region salmon pink, abdominal region green (due to contents).

Zooids (Fig. 1B) up to 3.5 mm. long, 2.2 mm. wide in pharyngeal region which has 18 fine longitudinal muscle bands of 4 to 6 fibres. Rectal-oesophageal region short. Abdominal region about half the width of pharyngeal. A long vascular process with a central septum projects from abdominal region (Fig. 1E). Branchial and atrial apertures each with six short lobes.

Pharynx with 24 tentacles of three orders of size, regularly arranged. On the inner wall of the pharynx two distinct transverse folds from each of which a long lappet curves backwards at the level of the fourth stigmata from the mid-dorsal line. 3 rows of 28 to 29 stigmata, 8 to 15 times as long as wide. Parastigmatic vessels absent. Oesophagus narrow; stomach short, smooth-walled, very curved (Fig. 1G); intestine long, narrow; anal aperture smooth-edged.

Zooids hermaphrodite. In specimens collected 22nd October, 1952, testis in the form of a rosette of 8-14 pear-shaped lobes situated on right of intestinal loop just below stomach (Fig. 1B). Though the rudimentary brood

pouch is present in these specimens the ovary could not be identified with certainty. Nor was it apparent in specimens collected 1st November, 1952, or 20th December, 1952. It is suspected from the number of layers on the wall of the brood pouch that the ovary is situated in the lower region of the atrial chamber, as it is in *Sydneoides tamaramae* Kesteven, and that the brood pouch develops around the ovary, but the proof of this could not be obtained (Fig. 1F).

Never more than one tadpole per brood pouch. Brood pouches become large and remain attached to zooids (Fig. 1C). Largest tadpoles (in brood pouches of colonies collected 20.xii.51) 2.4 mm. wide in head region, 6.8 mm. long (4.0 mm. being occupied by the tail). Tadpoles peculiar in the possession of two elongated suckers which lie one below the other at the extreme anterior end (Figs. 1C, 1D). Tadpoles with well developed stigmata and eye spot show no sign of stolon or buds. This species is quite unlike any hitherto described. Its resemblance to *Colella claviformis* Herdman is only superficial. I am indebted to the Australian Museum for permission to examine the type specimen of the latter. The main differences between it and *Atapozoa marshi* lie in the structure of brood pouch (which in *Colella claviformis* is merely an outbulging of the atrial wall), the number of embryos per brood pouch, and the arrangement of zooids in the colony—those of *Atapozoa marshi* being all at the one stage of sexual maturity, whereas those of *Colella claviformis* are at different stages of sexual maturity in the distal and proximal regions of the head. The stalked ascidians collected on reefs at Roebuck Bay near Broome and depicted by Saville-Kent (1897) resemble this species in form of colony but differ markedly in colour from the specimens in the present collection. Saville-Kent describes them as being a "transparent grey hue, sprinkled throughout their lower inflated areas with minute bright blue spots. These spots . . . are found to represent the separate bodies of the many hundred zooids . . .". Great colour range is known for many species of ascidians and may also occur in *Atapozoa marshi*.

Distribution.—Trigg Island, near Perth, Western Australia. Collected by Mrs. L. Marsh from the roofs of caverns under reefs.

Type specimen.—Deposited in the Australian Museum, Sydney, No. U3843.

Acknowledgment

I am greatly indebted to Mrs. L. Marsh for a very well preserved material, gathered from a comparatively inaccessible locality at different periods in the hope that a seasonal range could be studied. However, it is apparent that the questions of position of the ovary and size of the ovum can be solved only by local scientists with more or less daily access to material. The life cycle of this ascidian will form a rewarding study.

References

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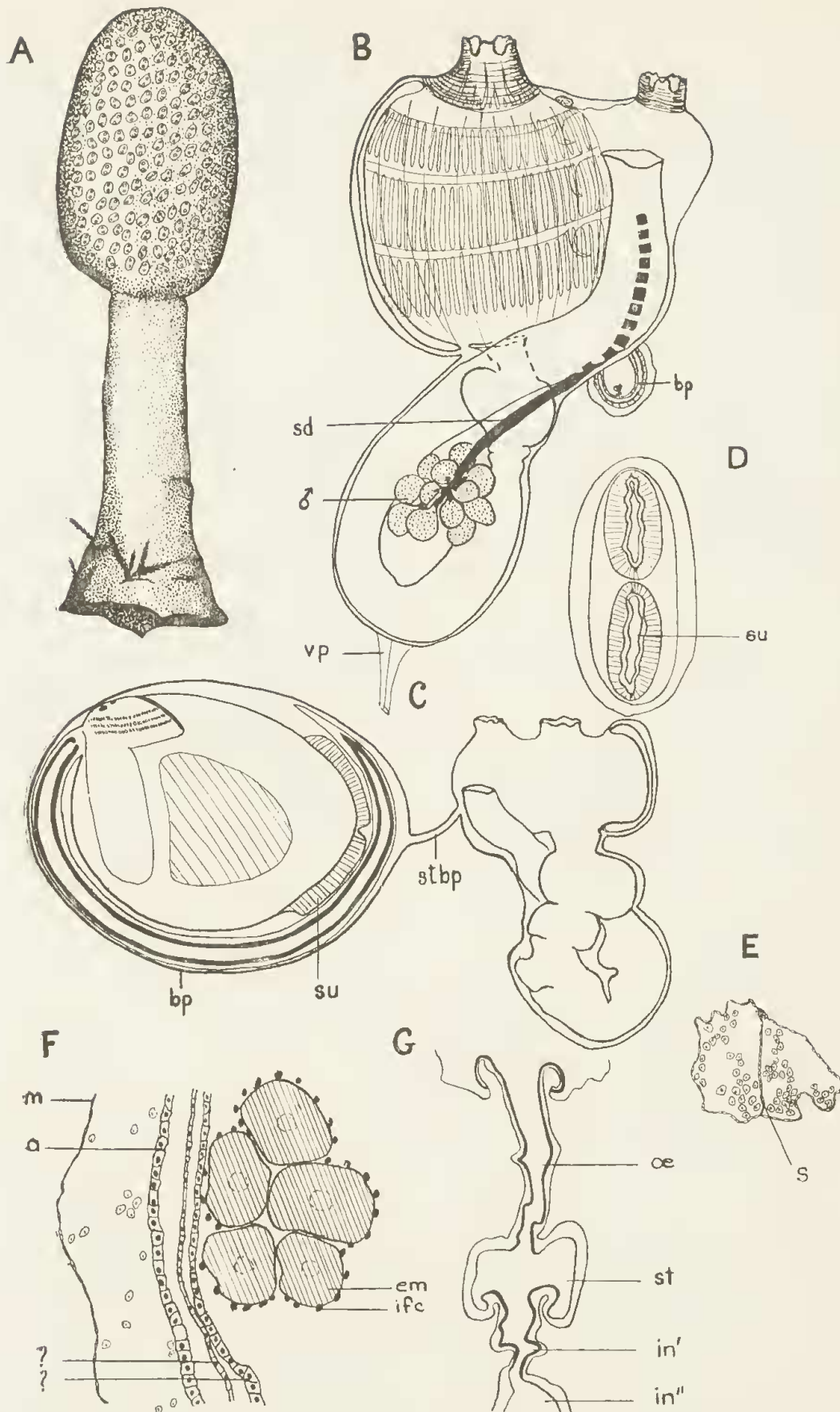


Fig. 1.—*Atapozoa marshi*. A—Colony $\times 1$. B—Left side of zooid with small brood pouch $\times 20$. C—Right side of zooid with large brood pouch in which is held an almost mature tadpole $\times 20$. D—Anterior end of tadpole showing suckers $\times 20$. E—T.S. vascular process. F—Wall of brood pouch $\times 380$. G—L.S. stomach of zooid.

Explanation of Lettering

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| a—atrial lining. | in''—second portion of intestine. | st—stomach. |
| bp—brood pouch. | œ—œsophagus. | stbp—stalk of brood pouch. |
| em—cells of embryo | m—mantle wall. | su—sucker. |
| ifc—?inner follicle cells. | s—septum. | vp—vascular process. |
| in'—first portion of intestine. | sd—sperm duct. | ○→—testis. |